We acknowledge Jonathan Holmes and the anonymous referee for their reviews and constructive comments that helped to improve this manuscript. We have revised it as described in detail below, and we hope that we have dealt with all suggestions in an adequate manner. For the corrections, we provide page and line numbers from the revised manuscript with track changes. The references cited can be found in the manuscript.

Referee 2 (anonymous)

In this study, Cauquoin et al. conducted a set of time slice experiments with newer version of isotope-enabled coupled climate model, namely MPI-ESM-wiso, and comprehensively validated the results by fully using the currently available isotopic data over the world. Moreover, they made analyses on how isotopic information can be proxy of climate information by using isotope-temperature, isotope-precipitation, isotope-salinity relationships. In conventional method, isotope-climate relationship is assumed to be stable (meaning that the same linear relationship is assumed for both climates), but it is highly doubtful. This study revealed that such simple relationship is indeed not same in different climates because the isotope information is determined by complicated processes.
The manuscript is very well written. The results are nicely illustrated by the figures, and the findings and conclusions are logically reasonable and convincing. Thus I have only minor comments.

1. Abstract is perhaps too long. So that the important essence of the paper is diluted. I would like the authors to make the abstract more concise.
We made changes in the abstract accordingly.

2. In abstract and conclusions, the authors cautioned that interpretation of isotope information is more complex than previously thought. It is true, but is there any recommendation?
Concerning West Antarctica, the coupling with an ice sheet model or the use of a zoomed grid over this area could help to better describe the role of the water vapor transport and sea ice. A systematic isotope model inter-comparison study for further insights on model-dependency of these results would be beneficial, too (abstract: p2 lines 2-5 and lines 9-10; conclusion: p30 lines 9-13 and lines 21-22).

3. Almost all abbreviations are directly used without telling the long names.
We checked that the long names of the corresponding acronyms are stated in the manuscript (MPI-ESM, SISAL, GISS, IAEA, HadCM3….).

4. Figure 4c and 4d show that the modeled sea water D-excess is significantly less fluctuated than the observation. But isn't it due to the layer thickness? The observed depth is very shallow, so surface kinetic fractionation is highly influential. For more appropriate comparison, some sort of simulator (for bucket sampling?) would be needed.
We added a statement about potential model-data mismatches due to different vertical layer thicknesses, as suggested by the referee (p15, lines 20-21). We also mention in the initial manuscript the too coarse horizontal resolution in MPIOM as a solution for the southern Indian Ocean data-model mismatch. We rephrased this sentence, as the resolution affects the model-data comparison on a global scale (p15, lines 21-22).

5. Mid-Holocene climate is shown in 3.2.1, and the authors try to explain its plausibility. But isn't it simply the same as the MPI-ESM results? If so, the part can be omitted only by referring appropriate paper for PMIP6.

Yes, to add the isotopes in the MPI-ESM does not change the values of the 'standard' variables like temperature. However, according to our knowledge, this is the first time that the 6k results are shown with this recent release of the model (MPI-ESM1.2, see Mauritsen et al., 2019).

6. Figure 8 and 9 show isotope-climate relationships in pre-industrial period. Why don't you show the same quantities for MH and the difference between PI and MH?

As we declared at the beginning of the section 4, the figures 8 and 9 for 6k are similar to the PI ones. For avoiding repetitions, we did not put them in the manuscript. We added the figures in Supplementary Materials (that you can see below) and a statement in the introduction part of the section 4 (p 21, lines 7-8).

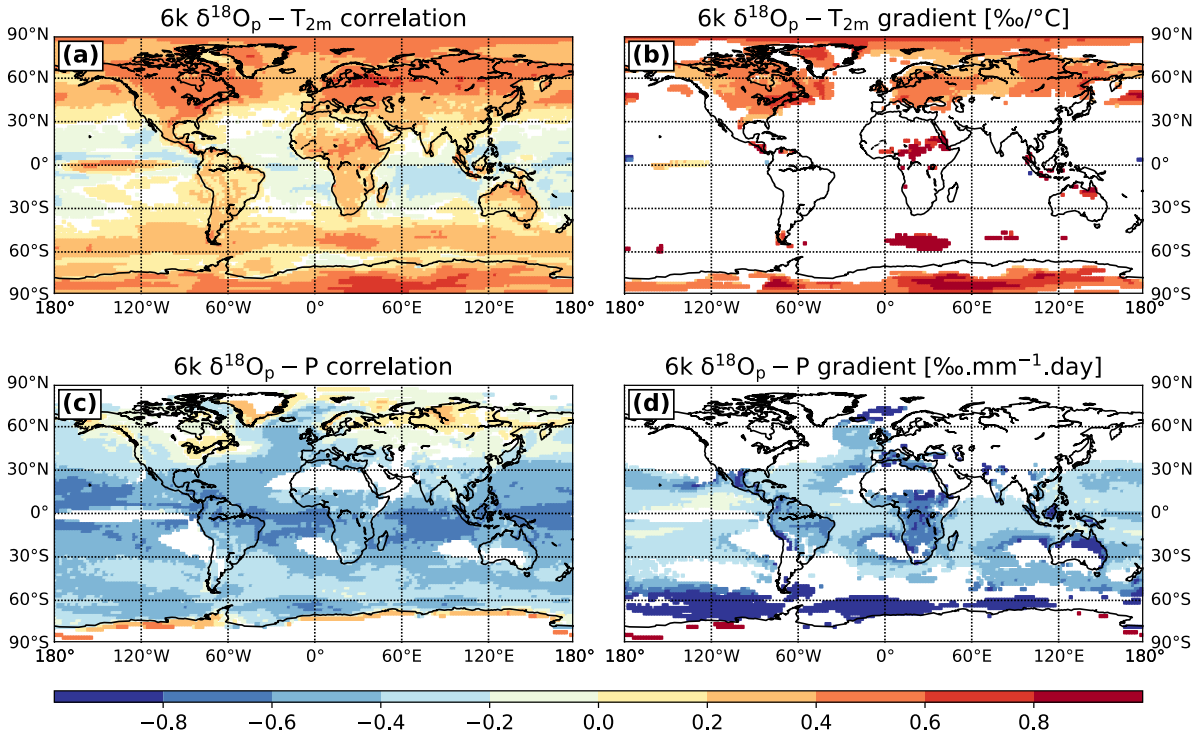

Figure S1: As Figure 8 but for 6k.

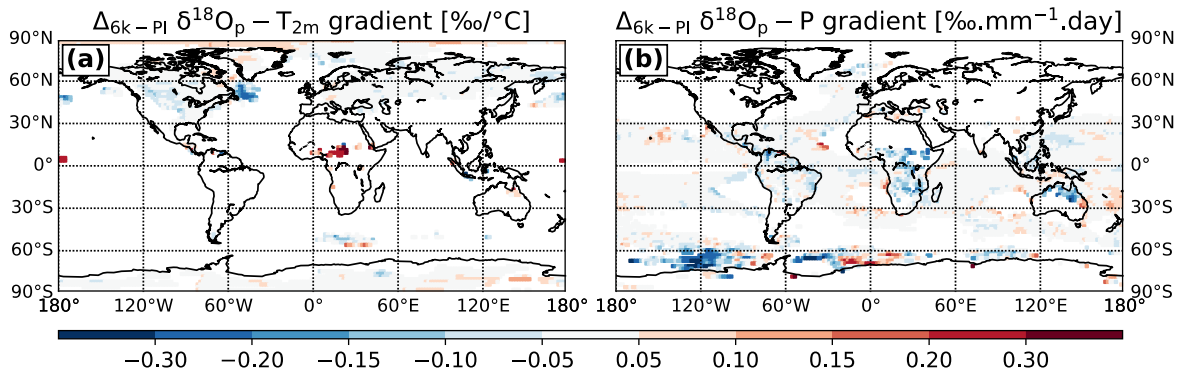

Figure S2: Distribution of the differences between the 6k $\delta^{18}O_p$ – temperature gradients and the PI ones (a). The same for the $\delta^{18}O_p$ – precipitation gradients (b).

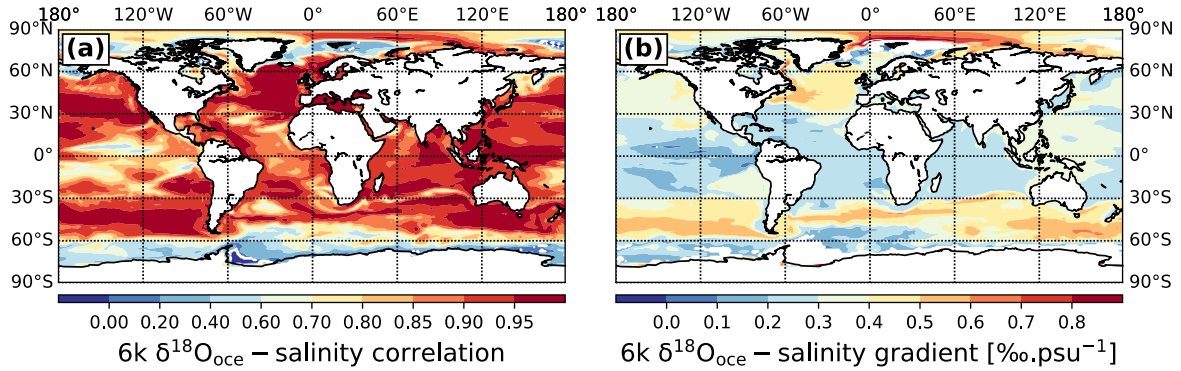

Figure S3: As Figure 9 but for 6k.

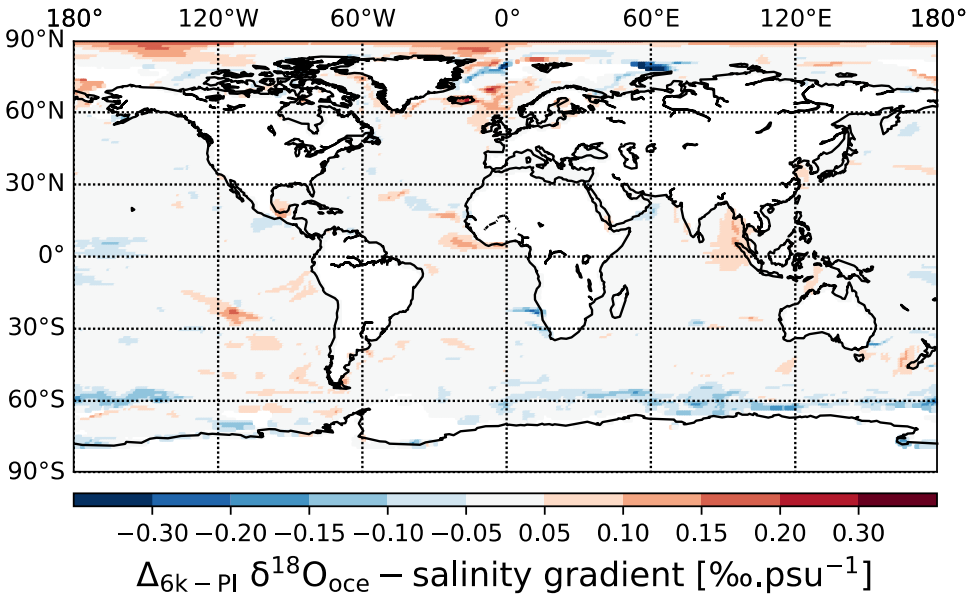

Figure S4: Distribution of the differences between the 6k $\delta^{18}O_{oce}$ – salinity gradients and the PI ones.